

WHAT IS CLAIMED IS:

1. A water treatment reactor for simultaneous electrocoagulation and advanced oxidation processes comprising:

an upright sealed tank, the upright sealed tank having a metal body, or
5 a metallic material mounted on an inner wall thereof, for use as a cathode;

a sacrificial electrode used as an anode which is disposed in the tank and non-electrically connected to the cathode;

an intake tube for introducing influent water into the button of the tank;

10 an air input for introducing air or oxygen-containing gas into the tank;

a mixing device disposed in the bottom of the tank for enabling mixing of the influent water;

an outlet tube for venting processed water from a top of the tank;

a gas-liquid separator which is in fluid communication with the tank
15 at the top of the tank for expelling a gas from the tank without water expelling; and

a direct current supply having a positive electrode electrically connected to the anode and a negative electrode electrically connected to the cathode.

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2. The reactor as claimed in claim 1 further comprising an oxidant supply device mounted on the intake tube.

3. The reactor as claimed in claim 2, wherein the oxidant supply

device includes a venturi in fluid communication with the intake tube.

4. The reactor as claimed in claim 1, wherein the sacrificial electrode is made of iron, aluminum, copper or stainless steel.

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5. The reactor as claimed in claim 4, wherein the sacrificial electrode is made of iron.

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6. The reactor as claimed in claim 1, wherein the reactor is made of stainless steel.

7. The reactor as claimed in claim 1, wherein the mixing device further comprises a spiral board, a packing material or a perforated dish.

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8. The reactor as claimed in claim 1, wherein the gas-liquid separator further comprises a gas-liquid separating valve.